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Biometric Technology Goes Live

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Remember those neat tricks in science-fiction and spy movies: heavy electronic doors that slide open when handprints are scanned, laser beams that invisibly *transmit* top-secret information? Well, such a future may actually be closer than you think. With the emergence of *biometric* technology, everyday applications, including many in banking, are starting to resemble those of sci-fi space flicks.

Biometric technology takes advantage of characteristics that are unique to each individual, such as fingerprints and eye or voice patterns. Through fingerprinting, hand geometry, retinal scanning, voice verification and signature verification, these biometric characteristics can serve as a truth serum that ensures you are who you say you are.

The idea is certainly not new. Governmental agencies have long been advocates of biological identifiers and have already put the technology to work in several areas including law enforcement. Now add to that list several other areas such as immigration, welfare and motor vehicles. For example, states such as New York, New Jersey, California and Connecticut all have adopted biometric technology in their welfare programs to reliably dispense benefits to the correct recipients. And private companies are taking advantage of the technology to perform employee background checks as well as maintain time and attendance recordkeeping.

For years, the financial services arena has been the source of high hopes for biometric technology companies. Yet, the banking industry has taken a cautious approach in researching the technology for applications such as credit- and debit-card transactions, electronic benefits transfers, check fraud, employee verification, automated teller machine transactions and more. In these applications, the technology is designed to replace PIN numbers, passwords and other less secure means of identification.

"Realistically, we are still a considerable time away from widespread use and acceptance of biometric technologies within the financial industry," says Anna Stockel, engineering and marketing manager at Identix Corp., a company specializing in biometric personal verification systems.

"But we are certainly headed in that direction." Eyeing the ATM market

Despite biometrics' slow coming of age within the financial services arena, some institutions are not waiting around for its full bloom. The notoriously innovative Columbus, OH-based Huntington Bancshares, for example, is actively researching the use of biometric technology for ATM security.

"We chose to proceed with iris recognition technology because it is a very soft, unintrusive method," said Bill Randle, senior vice president at Huntington. "I think biometric recognition is part of the information age that will eventually become a standard. We are looking to the future of remote banking with video kiosks that also would be equipped with such a device."

Huntington has committed to using the technology, along with others. Japan-based OKI Electric Industry, Ltd. and other institutions, including one unnamed bank, have made investments in Princeton, NJ-based Sensor, Inc.'s development of a biometric-based ATM application, which uses the iris pattern of the human eye as the basis for identification. OKI Electronic alone has invested \$28.3 million for development and exclusive rights to the technology within the Japan banking industry. Others declined to divulge investment amounts.

"We have some key players involved," admits Kevin McQuade, vice president of strategic business development at Sensor, who says that a five-inch by five-inch prototype will be released by the end of the year.

The Sensor application is based on the licensed technology developed by IriScan, Inc. of Mt. Laurel, NJ. Sensor's IrisIdent products employ IriScan's patented process that utilizes images of the human iris as a means of personal identification. Sensor maintains that the iris has 400 discriminators as compared to the more commonly used biometric technology of fingerprinting, which has about 68.

IrisIdent uses standard video cameras and highly specialized image processing technology developed at the David Sarnoff Research Center, Princeton, NJ, to acquire iris images at distances of up to three feet. At an ATM, the entire identification process takes about two seconds. A customer walks up to the ATM, and the video camera captures an image of the iris which is then converted into a digital code and compared with the one already stored on file. If it is found to be a match, the system proceeds.

Proponents of other types biometric technologies contend that using the eye may likely be found intrusive by consumers. Not so in this case, says McQuade. Unlike other eye methods such as retinal scanning, there is no special device to look into. "There's nothing intrusive about it, there's absolutely no physical contact in the process," he says. "It's a standard video camera."

In addition, the company cites impressive accuracy, with no false acceptances. In a January 1995 test conducted by the Defense Nuclear Agency, the agency recorded one error out of 1,999 attempts, which was attributed to dirty eyeglasses worn by one subject.

Initially, Sensor is targeting ATM security, but has no plans to end there. Next generation systems will include a "smart camera" product that will secure financial transactions at the point of sale, according to McQuade. At this point, the price tag on the ATM application is estimated at about \$5,000 per machine. But McQuade adds, "It's hard to put a set price tag on something that's still under development."

Multiple opportunities

Other financial services organizations are realizing the potential for this technology extends far beyond the realm of ATMs. As MasterCard International migrates away from magnetic stripe to a chip platform worldwide by the year 2000, biometric technology is being researched as a security enhancement, according to Joel Lisker, senior vice president of security and risk management at MasterCard. "Because of our change in platforms, there is a whole new opportunity to secure the identity of the cardholder," says Lisker. "Many cardholders have experienced problems with PINs [personal identification numbers] so there is room for improvement. PINs are transferable, can be written down and do not actually require the cardholder to be present."

Lisker says that the company investigated several different areas of biometric technology before deciding to proceed with tests of fingerprinting for secure identification at the point of sale. Naming San Bruno, CA-based Identifier Corp. as its vendor, Lisker says that the duo will begin testing inhouse within a few months. Depending on the results obtained, external testing would begin shortly thereafter.

There are still hurdles to overcome associated with such a huge change, points out Lisker. Two distinct challenges faced by MasterCard pertain to ease of enrollment and to making the process viable at the point of sale. "We have to find some way of not imposing a burden on cardholders at the time of enrollment and we have to be cost-effective and reliable at the point of sale," he says.

MasterCard, which will conduct research and focus groups on consumer acceptance of the technology, is addressing both issues. First, current cardholders as well as new applicants would be able to enroll by mail. The enrollment form would include a space to provide a fingerprint. This treated section would be sealed with cellophane or a similar material that the consumer would peel away in order to leave a fingerprint on the inkless surface. Once received, the fingerprint data would be scanned on a high resolution scanner and the minutia and other information then stored on the card's chip.

At the point of sale, POS terminals would be similar in size and space to those currently installed for magnetic stripe transactions. The new terminal, which would most likely handle both magnetic stripe and chip platforms for universal card readership, would need to have a fingerprint reader that consumers would touch. That information would be searched against the chip card for the same fingerprint minutia value stored. Hence, the transaction would either proceed or abort on the basis of that

information.

"We are looking at this application from the perspective that levels of fraud will dramatically decrease while overall customer service will be enhanced," says Lisker. "We want to get to the point where whoever is properly enrolled will never be rejected at the point of sale."

Although declining to provide specific dollar amounts, Lisker says the biometric technology investment will be seen in incremental cost variables. "We've already decided to use chip technology, so that's the real expense for us," he says. "Biometric technology gives us greater value as an additional benefit."

Like any new technology, the costs of biometric identification are dropping quickly. Clint Fuller, vice president of financial services at The National Registry, Inc., says the cost of one of his company's workstations, which performs large-scale fingerprint identifications, is about \$1,000. "And that cost is coming down every quarter," he says.

NRI's system scans fingerprints with a camera, then plots the ridges of the prints to create unique identifiers that are 1,024 bits long. These identifiers are stored in a database. When an enrolled customer presents a fingerprint at a branch, for example, the system conducts a high-speed search to match the newly computed identifier against the existing database of fingerprint identifiers.

NRI, headquartered in St. Petersburg, FL, already has such systems up and running in five state welfare programs in the Northeast. The systems are aimed at preventing welfare recipients from re-enrolling for benefits under false identities. In New Jersey, welfare rolls dropped by 18 percent after 30 days of using the system, NRI officials said, indicating a drop-off in the number of successes (and subsequent attempts) to enroll under false pretenses.

As it moves into the financial services market, NRI is first targeting relatively small-scale applications such as employee and customer identification in the branch, as well as cash management services where corporate customers log directly onto a bank's systems from their own PCs. As the home banking market matures, this same principal of biometrically secure log-ons from remote PCs will apply.

Falling costs

Fuller notes that the cost of biometric identifiers will continue to go down, as the costs of other types of security continue to rise. For example, maintaining and updating computer passwords is becoming increasingly difficult and costly, as PC networks grow. With biometric technology in place, entire departments devoted to password maintenance could be eliminated.

While NRI has no customers in the financial services arena yet, it has struck a joint marketing agreement with Unisys Corp. to offer finger imaging solutions to financial markets. Indeed, the promising results of biometric technology has created a smorgasbord of strategic partnerships and joint ventures.

Sunnyvale, CA-based Identix has teamed up with Redwood Shores, CA-based Oracle Corp. to enhance the security offered to Oracle corporate users. Identix will supply fingerprint verification for Oracle's Secure Network software. Identix is working with numerous other vendors as well, including VeriFone Corp., Menlo Park, CA, to provide fingerprint verification at the point of sale.

Identix provides both one-to-one verification products, as well as cold searches. One-to-one verifications produce results in about one-tenth of a second and are typically the focus of financial service applications. "One-to-one verification is appropriate for most banking applications," says Stockel. "It's also where the most excitement is, but it's the furthest off."

Cold searches, on the other hand, are already being used within the financial services sector. Cold searches involve massive searches over large databases across the country and produce results in a 24-hour period rather than momentarily. Such searches are commonly used in law enforcement and for job applications that extend across state lines.

In January, The Charles Schwab Corp., a subsidiary of San Francisco-based Charles Schwab & Co., announced its investment in Identix's TouchPrint 600 electronic live-scan full fingerprinting system to assist in background checks on its headquarters employees. It is one of the first, if not the first, securities brokerage in the country to make use of the technology to conform with Securities & Exchange Commission requirements.

Schwab prints electronically recorded fingerprints on cards and sends them to the National Association of Securities Dealers, which then refers the records to the FBI for further screening. "The Identix system is working quite well," says Keith Headman, director of security and safety at Schwab. "It is expected both to reduce substantially the number of fingerprint records rejected for quality reasons and speed and refine the overall process."

Dishing out about \$52,000 for the system, it is considered a cost-effective investment based on staff-time saved and turnaround time saved in the actual verification process with the SEC. Headman indicates the company will consider the possibility of installing systems in other large Schwab offices across the country. Meanwhile, Schwab security management is developing a plan to broaden the screening resource base by tying in local and state law enforcement agency data.

Convenience wins

Biometric technology is producing high expectations for several applications in the future. Positive identification applications should promote a massive reduction in fraud cases. Meanwhile, fraud avoidance rates are expected to skyrocket, deterring criminals from attempting fraud in the first place.

But, some may question whether consumers will accept the new technology with open arms or rebel against such futuristic advancements. "Convenience wins!" says Identix's Stockel. "The technology provides reliable and accurate security solutions that are convenient. That's the bottom line."

Mastercard's Lisker agrees that the advanced technology of biometrics will undoubtedly be an emerging trend of the future. He concludes, "In this industry, anyone not thinking in terms of biometric technology is not thinking very far ahead."

A Sense Of The Future

The following lists a few companies specializing in biometric-based products.

EyeDentify, Inc. Baton Rouge, LA (504) 927-4290

Contact: Buddy Boyett, vice president of business development

Biometric Application: Retinal scanning

Products: EyeDentify 2001, Ultra Prox

Target Markets: Financial services, law enforcement, security industry, corporate sector

Founded: 1976

Identicator, Inc. San Bruno, CA (415) 873-8653

Contact: Oscar Pieper, president

Biometric Application: Fingerprint minutia

Products: Cardscan, Digit-10, DFR 90 & 95, Roller Palm Printer, Pre-print, Retabs, Perfect Ink

Target Markets: Financial services, corporate sector, security industry

Founded: 1971

Identix, Inc. Sunnyvale, CA (408) 739-2000

Contact: Anna Stockel, engineering and marketing manager

Biometric Application: Fingerprint verification

Products: TouchView; TouchPrint; TouchSafe; Touch Lock, TouchClock, TouchLan and DocuColor

Target Markets: Law enforcement; welfare, immigration, financial services, corporate sector for facility and information access control

Founded: 1985

IrisScan, Inc. Mt. Laurel, NJ (609) 234-7977

Contact: Jill Nelson, director of business development

Biometric Application: Iris recognition

Products: System 2000EAC, IrisCode recognition software, technology licensing

Target Markets: Security industry, financial services, public sector

Founded: 1990

National Registry, Inc. St. Petersburg, FL (703) 503-9070

Contact: Clint Fuller, vice president of product marketing and financial services

Biometric Application: Fingerprint imaging

Products: NRIdentity Series

Target Markets: Financial services (through an alliance with Unisys Corp.), welfare, security industry, public sector

Founded: 1991

Sensar, Inc. Princeton, NJ (609) 734-2931

Contact: Kevin McQuade, vice president of strategic business development

Biometric Application: Iris recognition

Products: IrisIdent

Target Markets: Financial services, government markets

Founded: 1992

Surfing The Mutual Fund Tidal Wave

While consumers' craze for mutual funds has been sending the Dow Jones Industrial Average to dizzying heights, it is threatening to send banks into a tizzy just trying to process these volumes. Bankers on the vanguard (pun intended) of non-proprietary funds are bringing in automation to centralize purchases, allocations, dividend payments and portfolio accounting for the thousands of funds in the marketplace.

As of February, there were 5,837 different fund families available in the U.S. through banks and other outlets, according to the Investment Company Institute, a Washington D.C.-based trade association for the mutual fund industry. And, each fund complex, like a Fidelity or a Putnam, can have hundreds of funds from which to choose. This means there are about 8,000 individual funds headquartered in the U.S., says Michael VanDam, a spokesperson for Morningstar, a firm that specializes in tracking the mutual fund industry.

New funds keep cropping up at a frantic pace, as each fund family wants to make sure that it has flavors that cater to every possible investor whim. In 1995, 862 continued from page one

new funds were created. That's down from 1,719 that were created in 1994, notes VanDam. While no statistics are available yet for this year, the record high levels of mutual fund purchases so far in 1996 suggest that many more funds are in the offing.

And the sales figures are nothing to sneeze at. During the first two months of this year, a recordbreaking \$57 million went down in new sales of mutual funds, according to the Investment Company Institute. That two-month activity is almost half of 1995's total annual activity of \$123 million. During the first two months of 1995, only \$11.6 million in new sales happened. In 1994, sales reached \$44.9 million in the first two months of the year.

Getting a slice

Banks and thrifts are increasingly looking to get a slice of this profitable pie. A recent study by KPMG Peat Marwick LLP says that about 54 percent of these institutions already sell either proprietary or non-proprietary mutual funds. Of those not currently selling funds, two out of five plan to do so in the future. The Investment Company Institute puts the number of funds-both proprietary and non-proprietary-sold through bank channels in 1994 at 2,072.

Non-proprietary funds can be a much easier way of getting started than having to corral fund managers for proprietary funds. The perk of selling other carriers' funds is having a wider array to offer to clients so they can choose and set up a varied mutual fund portfolio. From that starting point, banks can then easily supplement the offerings with proprietary funds.

But, the tidal wave of non-proprietary funds is much easier to surf with a system that automates the purchases, sales and fund allocations of the many funds on the market. The waters are even calmer when the system can plug into portfolio accounting systems, eliminating the need to reenter data when it's time to break down daily net holdings into what each customer owns, or to distribute dividend payments to all of the shareholders of the different funds.

Consider the difficulty in performing these massively detail-oriented accounting tasks for the customers of just a single non-proprietary fund. Expand the chore to include a number of funds, each earning varying rates of return and each requiring different protocols and procedures in terms of the fund company interface. It all adds up to a screaming need for automation.

Systems are coming to the rescue at a number of banks. This summer, a fleet of banks will participate in live pilot testing of an integrated mutual fund system from SEI Investment Services, Wayne, PA. The product, FundWeb, essentially provides a convenient front-end to the many and often complicated electronic pathways to and from mutual fund companies. FundWeb

enables bankers to log onto just one system to communicate with 80 percent of the mutual funds in the U.S. The software then feeds data from the mutual fund companies directly into SEI's trust accounting packages, eliminating the need to re-key information.

Specifically, FundWeb processes the buying and selling of mutual fund shares, allocates funds within fund complexes, and obtains daily valuations and dividend payment information. It feeds into the Financial Access Network of DST, a transfer agent in Kansas City, MO, that covers some 4,485 individual funds, or 215 different fund complexes. As a transfer agent, DST acts on behalf of the funds, transferring shares of funds in exchange for settlements on a net basis. DST keeps records of holdings on an aggregated basis, according to Rod Wirik, a spokesperson for DST. This electronic link will be the first one to kick in during the pilot test beginning this summer.

Central source

FundWeb also pipelines into the National Securities Clearing Corp.'s (NSCC) Fund/SERV and Networking services. Fund/SERV "accommodates the purchase, sale, settlement and registration of retail mutual fund transactions. It allows a bank or broker to come to a centralized source to process mutual fund transactions" for 280 fund complexes, reaching a base of 230 user organizations, says John Vrettos, vice president and director of marketing at NSCC. Interestingly, 51 percent of transactions sent to Fund/SERV are routed to DST for settlement, says Wirik. Networking is NSCC's central hub for mutual funds and buying institutions to exchange account balances, dividend and interest information, capital gains or losses, and related data.

The combined services from NSCC and DST eliminate the paper-intensive process of registering new mutual fund accounts; divvying up percentages amongst individual funds within families; having to contact the funds to obtain net asset values (NAV); determining dividend payments, and all of the chaos that ensues from such manual processes.

Useful, but...

While NSCC and DST's services are useful in and of themselves, using them without a front-end still requires reentry of data when it's time to do sub-accounting, that is, to break down aggregate accounting results into individual customer accounts. The set-up also requires banks to manually verify each holding, dividend payment and the like.

This is where SEI's FundWeb steps in. One of the FundWeb-piloting banks, Banc One, currently uses other SEI products to service its \$11 billion in non-proprietary and \$3 billion in proprietary mutual funds. Mike Ryba, director of investment management support at Banc One Investment Management and Trust, foresees great benefits with FundWeb. Ryba is looking forward to the day when his department can do away with re-entering data and performing duties by hand.

Today, without FundWeb, a process that begins in an automated fashion reverts to paper-pushing. Banc One salespeople working in a number of states input mutual fund orders into an SEI system. The trades get routed to Banc One's main desk in Columbus, OH. From there, staffers must phone or fax orders in to the various mutual fund companies. DST currently performs the actual transfers of fund shares on the back end, as well as the aggregated recordkeeping, but the bank must manually check the listings and then input them into the bank's own accounting system, Trust 3000.

No data re-entry

Banc One will be hooked up to the NSCC's Fund/SERV this summer. But Ryba says the NSCC's fund coverage isn't as extensive as his department will need, so orders to some mutual fund companies will still have to be phoned or faxed. And, Fund/SERV doesn't pipe into the bank's accounting system.

This piece of the automation pie will be provided by SEI's FundWeb. "Avoiding re-entry of data will mean huge savings for us in people, resources and the ability to meet our client requirements," explains Ryba. "We now have 15 to 30 people doing trading, reconciliation and income. With automation, we could easily eliminate at least 50 percent of that and free people up to do other things. We could get out of reconciliation, dividend posting and trading."

These processes require a tremendous amount of manual intervention today, Ryba says. "For example, we'll get tens of thousands of mutual fund statements. We have to take that paper, balance it, reconcile it and then post it. FundWeb will automatically balance those positions when we're up

and running, and give us reports on our out-of-balance positions."

FundWeb will easily pay for itself within a year, Ryba estimates. One chunk of the savings will come in eliminating phone calls, faxes and individual wire transfers. FundWeb lets banks net payments into one wire.

No redundancies

FundWeb will allow other banks to do away with a plethora of front end software issued by a number of the fund families, such as Fidelity and Federated. While these packages automate many mutual fund processes, and a few of the families are kind enough to include the funds of some of their competitors, the coverage is far from comprehensive. This forces a bank to pick up several of the applications, clogging networks and mainframes with what is essentially redundant.

Commerce Bank, Kansas City, MO, uses three different applications just to place batch trades in its \$8 billion of non-proprietary mutual funds, says Marcie Smith, securities cage supervisor. Commerce uses the Frank Russell FRIMCO system for its Russell Funds; EDGE for its Federated Funds and Fidelity's NFSC, which covers both Fidelity funds-in a subproduct called DART-and non-Fidelity funds. Then, the \$6 billion in Commerce Bank's proprietary mutual fund set is processed through DST. All day long, batch data on positions, interest and dividends, capital gains and the like, from these four sources must be input in the bank's SEI trust accounting system, so it can be broken down.

"FundWeb will eliminate all of these various systems that we have. It will take our trading information and send it electronically to these funds," notes Smith. "I foresee a reallocation of staff from gathering paper. Right now, we still have to gather paper because each order entry for a trade produces a trade ticket. So, we could easily have 200 trades on a given day, and 200 pieces of paper that have to be sorted, reviewed, processed and data-entered on a given day. With FundWeb, when trades are input at the administrative level, the system will code them with CUSIP numbers or ticker numbers, then route them to the appropriate mutual fund technology vendor, like DST, or directly to the issuer of the mutual fund."

Concludes Smith, "Right now we are watching our mutual fund trading volume go up. I think this technology is late in coming. The industry is not bottlenecked, but it's pretty close. I think all of us are wishing that we had done this two years ago."

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